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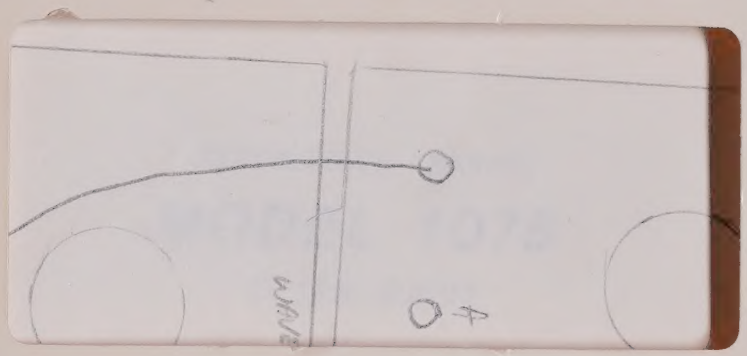

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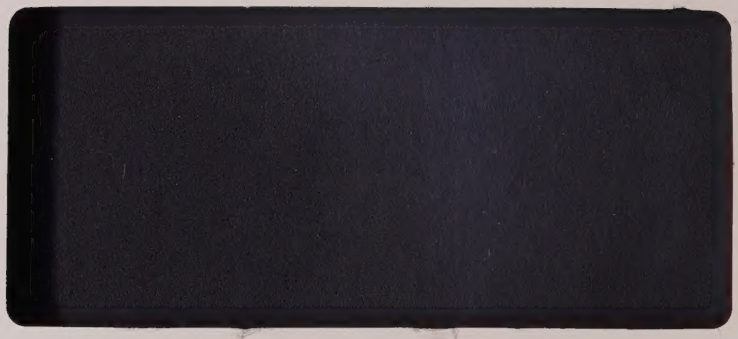
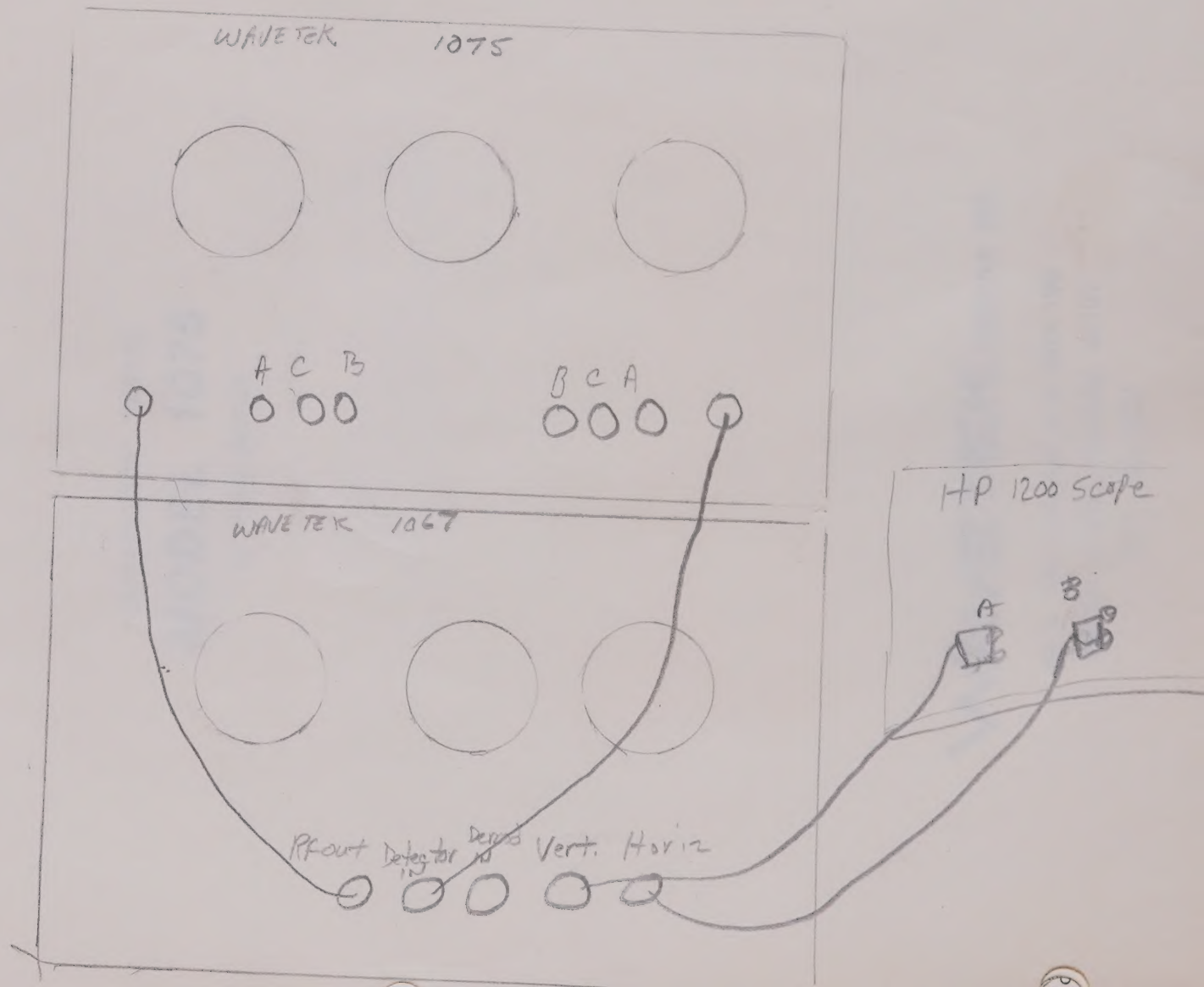
WAVETEK® INDIANA INC.

66 N. 1st AVENUE, P.O. BOX 190

BEECH GROVE, INDIANA 46107

317—783-3221




WAVETEK 1075
A C B
B C A
WAVETEK 1067
HP 1200 Scope
A
B
RF out
Vert.
Horiz

Serial No._____

INSTRUCTION MANUAL

MODEL 1075

RF COMPARATOR

WAVETEK INDIANA INC.

66 N. 1ST. AVENUE, P.O. BOX 190
BEECH GROVE, INDIANA 46107
317—783-3221

WARRANTY

All Wavetek instruments are warranteed against defects in material and workmanship for a period of one year after date of manufacture. Wavetek agrees to repair or replace any assembly or component (except batteries) found to be defective, under normal use during this period. Transfermatic Switch assemblies, manufactured by Wavetek, are unconditionally warranteed for the life of the instrument. Wavetek's obligation under this warranty is limited solely to repairing any such instrument which in Wavetek's sole opinion proves to be defective within the scope of the warranty when returned to the factory or to an authorized service center. Transportation to the factory or service center is to be prepaid by purchaser. Shipment should not be made without prior authorization by Wavetek.

This warranty does not apply to any products repaired or altered by persons not authorized by Wavetek, or not in accordance with instructions furnished by Wavetek. If the instrument is defective as a result of misuse, improper repair, or abnormal conditions or operations, repairs will be billed at cost.

Wavetek assumes no responsibility for its product being used in a hazardous or dangerous manner either alone or in conjunction with other equipment. High voltage used in some instruments may be dangerous if misused. Special disclaimers apply to these instruments. Wavetek assumes no liability for secondary charges or consequential damages and, in any event, Wavetek's liability for breach of warranty under any contract or otherwise, shall not exceed the purchase price of the specific instrument shipped and against which a claim is made.

Any recommendations made by Wavetek for use of its products are based upon tests believed to be reliable, but Wavetek makes no warranty of the results to be obtained. This warranty is in lieu of all other warranties, expressed or implied, and no representative or person is authorized to represent or assume for Wavetek any liability in connection with the sale of our products other than set forth herein.

SCOPE OF THIS MANUAL

This manual provides descriptive material and instructions for the installation, operation, maintenance, and repair of the Wavetek Model 1075 RF Comparator.

This document contains information proprietary to Wavetek. The information in this document is not to be used or duplicated in any manner without the prior approval in writing of Wavetek.

MODEL 1075

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SCHEMATICS AND PARTS LISTS

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CHANGE INFORMATION, IF ANY, APPEARS AT THE REAR OF THIS MANUAL.

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SECTION 1
GENERAL INFORMATION

1.1 INTRODUCTION

The Model 1075 is a dual channel RF Comparator for use in the 1 to 400 MHz range. It is designed for checking signal gain or loss by means of comparison against built-in reference attenuators. The Model 1075 works in conjunction with the Model 1067 Sweep/Signal Generator (See NOTE), receiving all required power and timing from it. The Model 1075 in turn provides level and slope information for the Model 1067. The front-panel FUNCTION switch provides a choice of channel "A" only, channel "B" only, or channels "A" and "B" in alternate display (AUTO).

NOTE

The Model 1075 may be used with any of the models of the WAVETEK 1060 series, although for Models 1061, 1062 appropriate matching pads should be used. The Model 1075 may also be used with the WAVETEK Model 1801B, or with Model 1801A-SP272. For purposes of this manual, only the Model 1067 will be mentioned.

1.2 SPECIFICATIONS

Frequency Range . . . . . 10-300 MHz (useable 5-400 MHz)

Gain/Loss Range . . . . . 59.9 dB in 0.1 dB steps

Impedance . . . . . 75 Ω

Gain/Loss Accuracy

	Error	min. Error at 00.0 dB	max. Error at 59.9 dB
Balance (Ch. A to Ch. B)	±0.1 dB	0.1	0.1
0.1 dB Atten.	±0.1 dB	0	0.1
1 dB Atten.	±0.2 dB	0	0.2
10 dB Atten.	±0.2 dB/10 dB	0	1.0
		±0.1 dB	±1.4 dB

VSWR . . . . . 1.25 (19 dB return loss).

Insertion Loss . . . . . <1.0 dB

Connectors . . . . . type F

Operating Modes . . . . . Ch. A, Ch. B, Auto.

Power . . . . . supplied by associated sweep generator.

Balance Adjustment Range . . . . . ±1 dB level
±1 dB slope

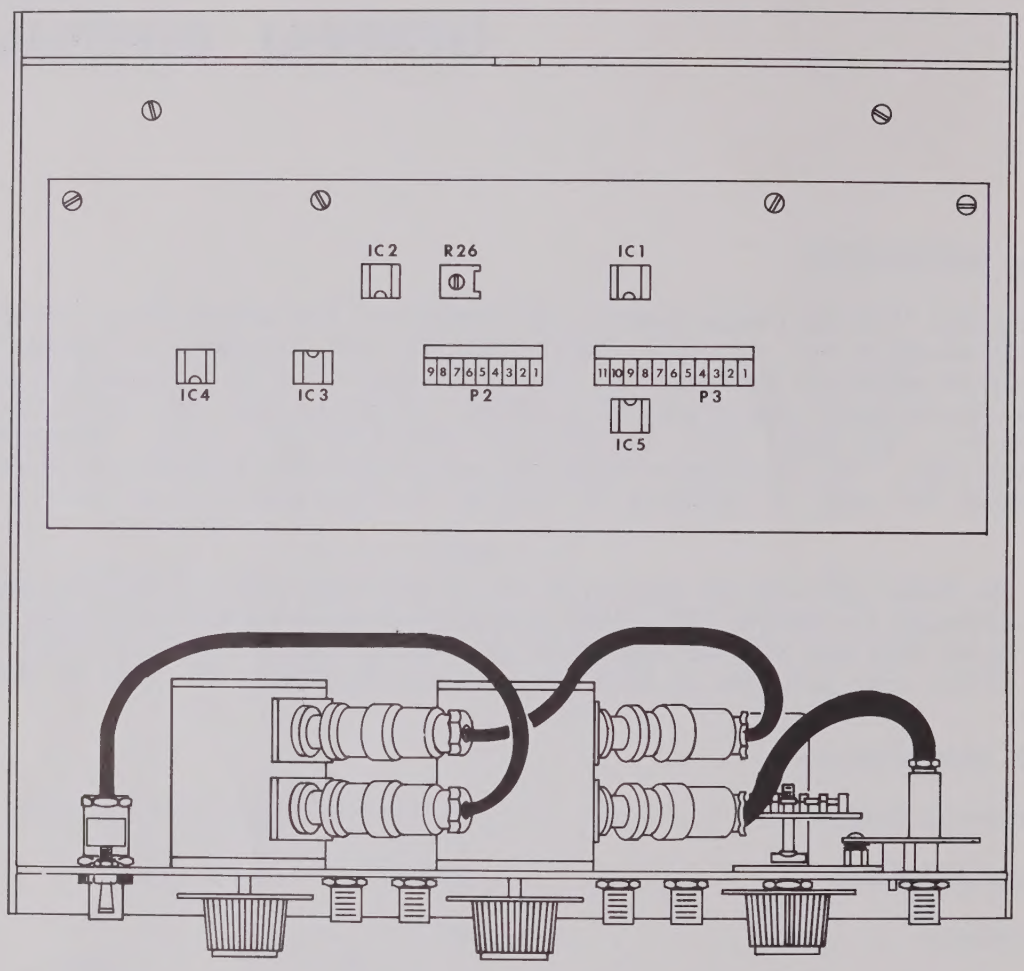


Figure 1-1. Top View

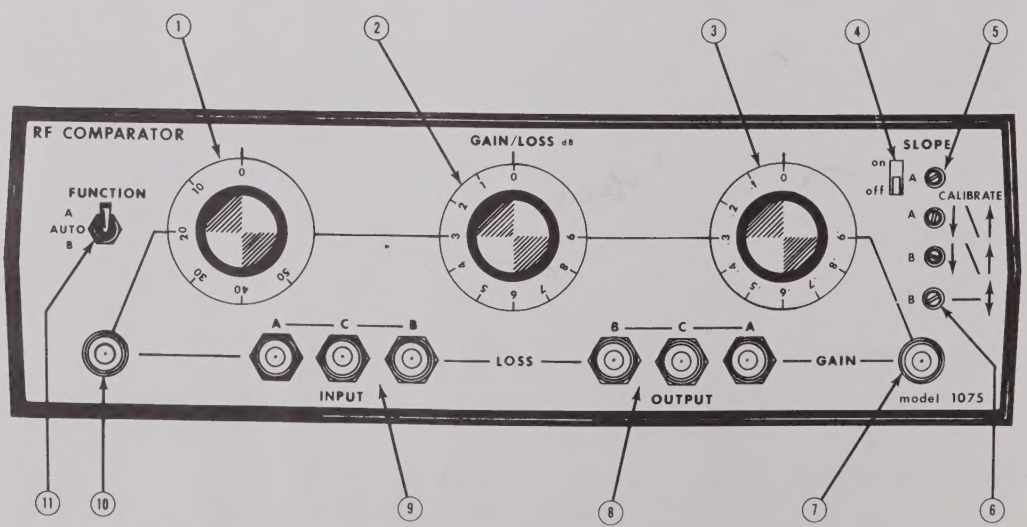


Figure 1-2. Front Panel

SECTION 2
OPERATION

2.1 INTRODUCTION

The Model 1075 obtains its operating power from the REMOTE jack of the Model 1067. Level information from the 0.1 dB STEP ATTENUATOR, SLOPE A, and SLOPE CALIBRATE controls remotely control the Model 1067 level.

2.2 INSTALLATION

The Model 1075 may be supplied either as a free-standing unit or as part of a "Test Set", in which the Model 1075 is mounted on top of a Model 1067. The Model 1075 may also be rack mounted in a standard 19" instrument rack using rack mount kit K015.

2.3 DESCRIPTION OF FRONT PANEL

Refer to Figure 1-2.

(1) 10 dB REFERENCE ATTENUATOR attenuates input of 10 dB steps from 0 dB to 50 dB.

(2) 1 dB REFERENCE ATTENUATOR attenuates input on 10 dB steps from 0 dB to 9 dB.

(3) 0.1 dB REFERENCE ATTENUATOR electronically attenuates input in 0.1 dB steps from 0 dB to 0.9 dB.

(4) SLOPE ON/OFF switch turns SLOPE A control on or off.

(5) SLOPE A control sets slope on channel A independent of SLOPE CALIBRATE controls.

(6) SLOPE CALIBRATE controls allows equilization and correlation of signals on channels A and B.

(7) OUTPUT from REFERENCE ATTENUATORS (there is a DC block on this port).

(8) OUTPUT COAXIAL SWITCH selects the output channel desired (controlled by FUNCTION switch).

(9) INPUT COAXIAL SWITCH selects the input channel desired (controlled by FUNCTION switch).

(10) INPUT to REFERENCE ATTENUATORS (there is no DC block on this port).

(11) FUNCTION switch selects channel A only, channel B only, or channels A and B alternately (AUTO).

2.4 OPERATION

CAUTION

The "F" connectors used on the Model 1075 are specially made for Wavetek. They exhibit excellent frequency characteristics, but are mechanically sensitive. When preparing cables, be sure that the center conductor does not exceed 0.025" in diameter and does not protrude more than 0.06" from the front of the connector nut.

2.4.1 CALIBRATION

Connect the Model 1075 to the Model 1067 as follows:

From	Through	To
1075 R.P. Plug		1067 R.P. REMOTE jack
1075 INPUT COAXIAL SWITCH A		1075 INPUT
1067 RF OUT		1075 INPUT COAXIAL SWITCH C
1075 OUTPUT COAXIAL SWITCH C		1067 DETECTOR IN
1075 OUTPUT	F-81*	1075 OUTPUT COAXIAL SWITCH A
1075 OUTPUT COAXIAL SWITCH B	F-81*	1075 INPUT COAXIAL SWITCH B
1067 SCOPE VERT OUT		Oscilloscope Vertical
1067 SCOPE HORIZ OUT		Oscilloscope Horizontal

*Use the same cables to connect the F-81 feed-through connector that will be used in actual test operation of the Model 1075.

Turn the Model 1067 on (this will apply power to the Model 1075 as well), and set the Model 1075 FUNCTION switch to AUTO. Set all three of the Model 1075 front-panel ATTENUATORS for 0 dB, turn the SLOPE ON/OFF switch to OFF, set the Model 1067 for desired center frequency, sweep width, and output level, and observe the two response curves on the oscilloscope. Unless the channel A and channel B cables are extremely long (or poorly constructed), it should be possible to match the traces to within 0.1 dB using the SLOPE CALIBRATE controls. The set-up is now ready for use.

2.4.2 Gain Measurements

For gain measurements, the active device to be measured is inserted in channel A while the F-81 feed-through connector is maintained in channel B, as in the calibration procedure above.

Gain and flatness are measured by adding attenuation in Channel A to cancel the gain of the device. Channel B is used as the reference.

2.4.3 Loss Measurements

For loss measurements, the loss device (usually, but not always, a passive device such as a splitter, tap, bridge, etc.) is inserted in channel B while the F-81 feed-through connector is maintained in channel A as in the calibration procedure above.

Attenuation is added to duplicate the loss of the device. Channel A is used as the reference.

2.4.4 Slope A

The SLOPE A control is provided so that the highest frequency being swept can be attenuated by up to 20 dB relative to the lowest frequency being swept. This slope is imposed on the Model 1067 output through channel A only, and is independent of the SLOPE CALIBRATE controls. The SLOPE A control is turned on and off by the SLOPE ON/OFF switch.

Care must be taken that the range of the Model 1067 OUTPUT VERNIER is not exceeded, otherwise, the PIN diode Leveler in the Model 1067 will "bottom out" causing distortion. The Model 1067 OUTPUT VERNIER has a 20 dB range (+7 to -13). Thus, if the full -20 dB slope is desired, the Model 1067 OUTPUT VERNIER must be set at maximum (+7). If only -12 dB slope is desired, the Model 1067 OUTPUT VERNIER may be safely set between +7 and (i.e. between 0 and 8 dB of attenuation on the dial, and so forth.

SECTION 3
THEORY OF OPERATION

3.1 INTRODUCTION

This section describes the function of each circuit as it relates to the operation of the Model 1075 Comparator (refer to the Model 1075 Wiring Diagram in Section 5 of this manual). The Model 1075 receives power from, and exchanges signals with, a Wavetek Model 1067 Sweep Generator through the rear-panel plug, P101.

3.2 RF CHANNELS

The Model 1075 provides two separate paths for RF signals. These paths are selected by two SPDT COAXIAL RF SWITCHES. One path, channel A, routes the signals through calibrated REFERENCE ATTENUATORS, with ports available for insertion of an unknown gain device. The other path, channel B, is a direct route with no gain or attenuation, and has ports available for insertion of an unknown loss device.

3.3 FUNCTION SWITCH

With the FUNCTION switch in position A, -9 V is applied to the switch drivers, IC3 and IC4. The output of IC3 is +13 V, and the output of IC4 is -13 V. In each RF switch, port A is internally connected to port C, and port B is internally disconnected.

With the FUNCTION switch in position B, +9 V is applied to the switch drivers, IC3 and IC4. The output of IC3 is -16 V, and the output of IC4 is +13 V. In each RF switch, port B is internally connected to port C, and port A is internally disconnected.

When the FUNCTION switch is in the AUTO position, the switch drivers are controlled by IC1A. IC1A and Q1 are parts of a flip-flop driven by the sweep generator's blanking signal. Therefore, in AUTO, the switch drivers' outputs change polarity with each sweep.

3.4 LEVEL PROGRAM GATING

IC3 also drives the Level Program gates, Q2 and Q3. Q2 is turned on when channel A is on and Q3 is turned on when channel B is on. Each Level Program is summed into IC1B, an inverting amplifier.

IC2A feeds a fixed portion of the inverted Freq/Sweep Program from the Model 1067 into each channel's Level Program through voltage dividers R21, R22, and R34, R39. The non-inverted Freq/Sweep Program is applied to R201 and R203, and then fed through voltage dividers R30, R31, and R38, R40 to each channel's Level Program. Since the voltage dividers for the non-inverted Freq/Sweep Program are half those of the inverted Freq/Sweep Program, slope may be applied equally in both directions to each channel depending on the settings of R201 and R203.

A DC voltage from R202 allows matching of the amplitude of channel B to that of channel A.

The Level Program is also affected by the 0.1 dB REFERENCE ATTENUATOR. S301 selects a voltage from a precision voltage divider. This voltage is applied to a voltage follower, IC2B, and is then applied to the Level Program. The output of IC2B may be calibrated using R26.

IC5 derives a fixed positive ramp from the scope horizontal drive (∧, P101, pin 10) signal from the Model 1067. The SLOPE A control (R204) selects a portion of this ramp, and feeds it into the channel A Level Program when the SLOPE ON/OFF switch (S201) is ON. This slope is independent of both frequency and sweep width.

SECTION 4
MAINTENANCE

4.1 INTRODUCTION

This section provides information for testing, calibrating, and trouble-shooting the Model 1075 Comparator.

4.2 SERVICE INFORMATION

4.2.1 CABINET DISASSEMBLY

If the Model 1075 is part of a Model 1067/1075 Test Set, unclamp the Model 1075 from the Model 1067 and separate the two instruments.

Turn the Model 1075 upside down and remove the 4 Phillips-head screws. Turn the Model 1075 right side up and lift off the top.

4.2.2 REMOVAL OF ASSEMBLIES

Refer to Figure 1-1.

The front-panel assembly and the rear panel simply lift out of grooves in the cabinet.

To remove either of the REFERENCE ATTENUATORS, first disconnect the two RF cables connected to it, then remove the knob and two front-panel mounting screws.

To remove either of the COAXIAL SWITCHES, first unsolder the control wires at the feed-throughs on the rear of the switch housing, then remove the three nuts from the front-panel connectors.

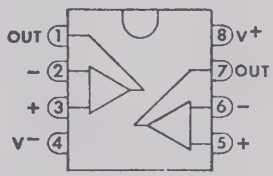
NOTE

Neither the REFERENCE ATTENUATORS nor the COAXIAL SWITCHES are user-serviceable, and should be returned to the factory for repair.

To lift the Main P.C. Board for trouble-shooting, remove the 4 hold-down screws. To remove the board completely, disconnect the two in-line jacks and slide the harness grommet out of the rear-panel slot.

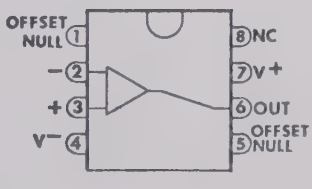
4.2.3 COMPONENT LEAD CONFIGURATIONS

Transistor and I.C. lead configurations are shown in Figure 4-1.

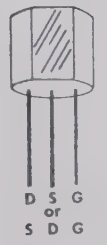


RC1458

2N5458
2N5461



741C



2N3854A

Figure 4-1. Lead Confiurations

4.3 PERFORMANCE CHECKS AND CALIBRATION

Set up the Models 1067 and 1075 according to the calibration procedure outlined in Section 2.4.1. Balance adjustment range is easily checked with this set-up.

To check the 0.1 dB REFERENCE ATTENUATOR calibration, first set the 1 dB REFERENCE ATTENUATOR to 1 dB. Note the level of the detected RF on the scope. Set the 1 dB REFERENCE ATTENUATOR to 0 dB. Set the 0.1 dB REFERENCE ATTENUATOR to the blank position next to 0.9 dB. The level of the detected RF on the scope should be within 0.1 dB of the previously noted value.

If calibration is necessary, remove the cabinet top as instructed in Section 4.2.1. Calibrate the 0.1 dB REFERENCE ATTENUATOR using R26 on the Main P.C. board. Replace the cabinet top.

The 1 dB and 10 dB REFERENCE ATTENUATOR accuracy can be checked using an H.P. Model 182C Oscilloscope with a Model 8558B Spectrum Analyzer plug-in head (or equivalent spectrum analyzer).

To check insertion loss, set FUNCTION switch to channel A. Note the detected RF level on the scope. Disconnect the cables from Model 1075 INPUT COAXIAL SWITCH C and OUTPUT COAXIAL SWITCH C and connect the cables with an F-81 (or equivalent) feed-through connector. The detected RF level on the scope should increase by less than 1 dB.

VSWR can be checked with a VSWR Autotester (Wiltron Model 67B75 or equivalent). Interconnecting cables must be as short as possible.

4.4 TROUBLESHOOTING

Troubleshooting is essentially a systematic process of elimination. A thorough understanding of the theory of operation of the Model 1075 (Section 3) should greatly reduce troubleshooting effort.

TROUBLESHOOTING HINTS

The following is a list of typical symptoms and recommended initial actions.

INTERMITTENT OPERATION - Check RF cables and rear-panel plug.

NO RF IN ANY FUNCTION - Check rear-panel plug.

Check Model 1067 operation by disconnecting Model 1075 from Model 1067 and connecting RF OUT to DETECTOR IN on Model 1067. If Model 1067 is operational, reconnect Model 1067 to Model 1075.

With the FUNCTION switch set to channel B, check INPUT COAXIAL SWITCH B for RF output. If a COAXIAL SWITCH is suspected defective, check at the rear of that switch for -13 V on the blue wire and +13 V on the violet wire. These minimum switch-drive voltages will have opposite polarities when the FUNCTION switch is set to channel A.

LOW RF IN ANY FUNCTION - Check switch-drive voltages as described above.

NO RF IN AUTO - Using an oscilloscope, check IC1A, pin 1, for a square wave with ±16 V amplitude. If IC1A output is correct, check the collector of Q1 for +18 VDC level with a -18 V pulse (to 0 V) at the end of each sweep.

LEVEL PROGRAM CONTROLS INOPERATIVE - Level Program controls include SLOPE A and SLOPE CALIBRATE controls, and the 0.1 dB REFERENCE ATTENUATOR. If all Level Program controls are inoperative, check IC2A, pin 7, for variation with Level Program controls.

If one Level Program control is inoperative, check the wiper of that control for variation.

SECTION 5
SCHEMATICS AND PARTS LISTS

5.1 INTRODUCTION

This section contains schematics and a list of replaceable electronic parts for the instrument. Also included is the Wavetek code for component manufacturers, a list of abbreviations used in the text, and an explanation of schematic symbols used.

The instrument parts list is divided to separate the various assemblies. For an assembly containing one or more subassemblies, the assembly list appears first, and is followed by the subassembly lists.

The lists appear in the following order.

PARTS LIST	ASSEMBLY
1010-00-0030	1075
1219-00-0048	HARNESS ASSY
1110-00-0841	MAIN BD ASSY
1212-00-0005	SWITCH ASSY, RS05
1218-00-0851	PC ASSY

5.2 MANUFACTURERS CODE

The following code is used on the parts lists to identify the manufacturer.

MANUFACTURER ABBREVIATIONS

ABBRV	NAME	CITY	ST
A-B	ALLEN-BRADLEY	MILWAUKEE	WI
A-D	ANALOG DEVICES	CAMBRIDGE	MA
A-H	ARROW HART, INC.	KETTERING	OH
A-I	ALAN INDUSTRIES	COLUMBUS	IN
A-M	AMERICAN MAGNETICS	CARTERVILLE	IL
A-P	AMERICAN PLASTICRAFT CO.	CHICAGO	IL
ABAC	ABACUS PACKAGING CO.	CHICAGO	IL
ACI	ADVANCE COMPONENTS, INC.	CENTERBROOK	CT
AER	AVX CERAMICS	MYRTLE BEACH	SC
AERTK	AERTECH INDUSTRIES	SUNNYVALE	CA
AHAM	AHAM COMPANY	AZUSA	CA
AIN	ALPHA INDUSTRIES, INC.	WOBURN	MA
ALC	ALCO ELECTRONICS PRODUCTS	NORTH ANDOVER	ME
ALLPL	ALL PLASTICS, INC.	INDIANAPOLIS	IN
AMP	AMP, INC.	HARRISBURG	PA
APL	AMPHENOL CONNECTOR SYSTEMS	BROADVIEW	IL
APX	AMPEREX ELECTRONIC CORP.	SLATERSVILLE	RI
ARC	ARCO ELECTRIC PRODUCTS	SHELBYVILLE	IN
ASC	ASSOCIATED SPRING	BRISTOL	CT
ASE	AIRCO SPEER ELECTRONICS	ST. MARYS	PA
AT/IN	ATLANTIC INDIA RUBBER COMPANY	CHICAGO	IL
ATC	AMERICAN TECHNICAL CERAMICS	HUNTINGTON STATION	NY
ATR	ATR COIL CO.	BLOOMINGTON	IN
AUGAT	AUGAT, INC.	ATTLEBORO	MA
AVT	AVANTEK, INC.	SANTA CLARA	CA
AWC	ALPHA WIRE	ELIZABETH	NJ
B-T	BEK-TEK, INC.	READING	PA
BEK	BECKMAN INSTRUMENTS, INC.	FULLERTON	CA
BEL	BELDEN CORP.	GENEVA	IL
BER	BERG ELECTRONICS	NEW CUMBERLAND	PA
BGH	BEECH GROVE HARDWARE	BEECH GROVE	IN
BOU	BOURNS, INC.	RIVERSIDE	CA
BREZ	BREEZE CORPORATIONS, INC.	UNION	NJ
BUCK	BUCKEYE STAMPING CO.	COLUMBUS	OH
BUD	BUD RADIO, INC.	WILLOUGHBY	OH
BURND	BURNDY CORP.	NORWALK	CT
BUS	BUSSMAN MFG.	ST. LOUIS	MO
C-D	CORNELL DUBILIER ELECT. DIV.	NEWARK	NJ
C-E	CLINTON ELECTRONICS	ROCKFORD	IL
C-H	CUTLER-HAMMER, INC.	MILWAUKEE	WI
C-I	COMPONENTS, INC.	BIDDEFORD	ME
C-J	TRW/CINCH	ELK GROVE VILLAGE	IL
C-K	C & K COMPONENTS, INC.	WATERTOWN	MA
C-L	CENTRALAB DIV.	MILWAUKEE	WI
C-W	C-W INDUSTRIES	WARMINSTER	PA
CAM	CAMBION	CAMBRIDGE	MA
CAR	CARLING ELECTRIC, INC.	WEST HARTFORD	CT
CDC	COMPONENT DEVELOPMENT CORP.	CARSON	CA
CECO	CENTRAL COIL CO.	BRAZIL	IN
CGW	CORNING GLASS WORKS	CORNING	NY
CHE	CHERRY ELECTRICAL PRODUCTS	WAUKEGAN	IL
CIMCO	CIMCO WIRE AND CABLE INC.	ALLENDALE	IL
CKI	CTS KNIGHTS, INC.	SANDWICH	IL

MANUFACTURER ABBREVIATIONS

ABBRV	NAME	CITY	ST
CLA	CLAIREX CORP.	MT. VERNON	NY
CLAR	CLAROSTAT MFG. CO	DOVER	NH
CLFX	COLE-FLEX CORP.	BABYLON	NY
CTS	CHICAGO TELEPHONE SYSTEMS	CHICAGO	IL
CTS-E	CTS OF ELKHART	ELKHART	IN
CTSBR	CTS OF BERNE	BERNE	IN
CTSBV	CTS OF BROWNSVILLE	BROWNSVILLE	TX
DAL	DALE TECHNOLOGY CORP.	HARTSDALE	NY
DAV	HARRY DAVIES MOLDING CO.	CHICAGO	IL
DEL	DELEVAN DIV.	EAST AURORA	NY
DEW	DEWIRE FABRICATING CORP.	LOWELL	MA
DIO	DIODES, INC.	CHATSWORTH	CA
DRA	DRAKE MANUFACTURING CO.	HARWOOD HEIGHTS	IL
E-C	ELECTRONIC CRYSTALS	KANSAS CITY	MO
E-M	ELECTRA/MIDLAND CORP.	MINERAL WELLS	TX
ELCO	ELCO INDUSTRIES	ROCKFORD	IL
ETP	ERIE TECHNOLOGICAL PRODUCTS	ERIE	PA
F-K	FROST-KING	****	**
F-S	FEDERAL SCREW	CHICAGO	IL
FAN	FANCOURT & CO.	GREENSBORO	NC
FCD	FAIRCHILD	MOUNTAIN VIEW	CA
FRTE	FAIR RITE PRODUCTS CORP.	WALLKILL	NY
G-E	GENERAL ELECTRIC	INDIANAPOLIS	IN
G-H	GRAYHILL, INC.	LA GRANGE	IL
G-I	GEN'L INSTRUMENT SEMICONDUCTOR	HICKSVILLE	NY
GAL	GALILEO ELECTRO-OPTICS	CARMEL	IN
GRIES	GRIES REPRODUCER	NEW ROCHELLE	NY
GRIP	GRIPMASTER CO.	MARLBORO	NJ
GUDL	GUDEBROD BROS. SILK CO.	CHICAGO	IL
H-P	HEWLETT-PACKARD	INDIANAPOLIS	IN
HEL	HELIPOT	ANAHEIM	CA
HEY	HEYMAN MFG. CO.	WAUKESHA	WI
HHS	HERMAN H. SMITH, INC.	BROOKLYN	NY
HIT	HITACHI AMERICA, LTD.	SAN FRANCISCO	CA
HOLUB	HOLUB DISTRIBUTING CO.	NEWPORT	KY
HUD	HUDSON TOOL & DIE CO.	NEWARK	NJ
HY/PL	HYDRO PLASTICS INC.	GEORGETOWN	KY
HYT	HYTRONICS	PINELLAS PARK	FL
INT	INTERSIL, INC.	CUPERTINO	CA
IRC	INTERNATIONAL RESISTANCE CO.	PHILADELPHIA	PA
ITT	INT'L TELEPHONE & TELEGRAPH	W. PALM BEACH	FL
JAN	JAN HARDWARE MFG. CO.	LONG ISLAND CITY	NY
JEF	JEFFERS	DUBOIS	PA
JEFWC	JEFFERSON WIRE AND CABLE	WORCHESTER	MA
JEW	JEWELL ELECTRICAL INSTRUMENTS	MANCHESTER	NH
JON	E.F. JOHNSON CO.	WASECA	MN
K-L	KERRIGAN LEWIS MFG.	CHICAGO	IL
K-S	K & S ENGINEERING CO.	CHICAGO	IL
KEENE	KEENE CORP.	NEWARK	DE
KEM	KEMTRON ELECTRON PRODUCTS	NEWBURYPORT	MA
KEY	KEYSTONE ELECTRONIC CORP.	NEW YORK	NY
KID	KIDCO, INC.	MEDFORD	NJ
KIN	KINGS ELECTRONICS	TUCKAHOE	NY

MANUFACTURER ABBREVIATIONS

ABBRV	NAME	CITY	ST
KSTR	KESTER SOLDER DIV.	CHICAGO	IL
KSW	KSW ELECTRONICS	INDIANAPOLIS	IN
LEYSE	LEYSE ALUMINUM CO.	KEWANEE	WI
LIT	LITTELFUSE, INC.	DES PLAINES	IL
LRC	LRC ELECTRONICS, INC.	HORNELL	NY
M-A	MICROWAVE ASSOCIATES	BURLINGTON	MA
M-D	MILLER DIAL & NAMEPLATE CO.	EL MONTE	CA
M-E	MEPCO ELECTRA, INC.	MORRISTOWN	NJ
M-O	ILLUMINATED PRODUCTS INC.	SANTA ANA	CA
MAL	MALLORY CONTROLS CO.	FRANKFORT	IN
MAND	MANDEX	CHICAGO	IL
MDC	MAIDA DEVELOPMENT CO.	HAMPTON	VA
MILN	MILLEN MFG. CO.	NEW YORK	NY
MMM	3M COMPANY	ST. PAUL	MN
MOL	MOLEX PRODUCTS	LISLE	IL
MOT	MOTOROLA SEMI. PROD. DIV.	INDIANAPOLIS	IN
MSP	MICRO SEMICONDUCTOR CORP.	SANTA ANA	CA
MYERS	MYERS SPRING CO.	LOGANSPORT	IN
N-T	NATIONAL TEL-TRONICS	LAREDO	TX
NAT	NATIONAL SEMICONDUCTOR CORP.	SANTA CLARA	CA
NEC	NIPPON ELECTRIC CO.	TOKYO, JAPAN	**
NEW	NEWARK ELECTRONICS	INDIANAPOLIS	IN
NYLO	NYLOMATIC	MORRISVILLE	PA
O-G	OPTI-GAGE INC.	DAYTON	OH
O-S	OMNI SPECTRA INC.	FARMINGTON	MI
OHM	OHMITE MFG. CO.	SKOKIE	IL
OMEGA	OMEGA WIRE & CABLE	HARLEYSVILLE	PA
P-B	POTTER AND BRUMFIELD	PRINCETON	IN
P-C	POWER COMPONENTS	WOODLAND HILLS	CA
P-K	PARKER KALON CORP.	CLIFTON	NJ
P-T	PENN TUBE PLASTICS CO.	CLIFTON HEIGHTS	PA
PAND	PANDUIT CORP.	TINLEY PARK	IL
PARA	PARAMETRIC INDUSTRIES	NORTHFIELD	IL
PEC	PACIFIC ELECTRICORD CO.	GARDENA	CA
PEC	PACIFIC ELECTRICORD CO.	GARDENA	CA
PHC	PHILADELPHIA HANDLE CO.	CAMDEN	NJ
PLSSY	PLESSEY ENG.	SCHILLER PARK	IL
POM	POMONA ELECTRONICS CO., INC.	POMONA	CA
PRMD	PYRAMID INDUSTRIES, INC.	PHOENIX	AZ
PRSN	PRECISION TUBE CO., INC	NORTH WALES	PA
PTN	PENN TRAN CORP.	BELLEFONT	PA
PYRO	PYROFILM CORP.	WHIPPANY	NY
PYTT	PYTTRONICS INDUSTRIES, INC.	MONTGOMERYVILLE	PA
Q-C	QUALITY COMPONENTS	ST. MARYS	PA
RAY	RAYTHEON	INDIANAPOLIS	IN
RCA	RCA	CAMDEN	NJ
REL	RELIANCE MICA CO.	BROOKLYN	NY
RICH	RICHCO PLASTIC CO.	CHICAGO	IL
RMC	RADIO MATERIALS CORP.	CHICAGO	IL
ROGAN	ROGAN CORP.	NORTHBROOK	IL
S-C	SPECIALTY CONNECTOR	INDIANAPOLIS	IN
S-G	STANDARD GRIGSBY	AURORA	IL
S-I	SWITCHCRAFT, INC.	CHICAGO	IL

MANUFACTURER ABBREVIATIONS

ABBRV	NAME	CITY	ST
S-S	SERVICE SUPPLY	INDIANAPOLIS	IN
S-T	SARKES TARZIAN	BLOOMINGTON	IN
SCC	STACKPOLE CARBON CO.	ST. MARYS	PA
SEAST	SEASTROM MFG. CO.	GLENDALE	CA
SEL	SEALECTRO CORP.	MAMARONECK	NY
SEM	SEMTECH	NEWBURY PARK	CA
SGM	SIGMA INSTRUMENTS	BRAINTREE	MA
SHAM	SHAMROCK PLASTICS & RUBBER CO.	INDIANAPOLIS	IN
SIEM	SIEMENS	ISELIN	NJ
SIG	SIGNETICS CORPORATION	SUNNYVALE	CA
SOUTH	SOUTHCO FASTENERS	LESTER	PA
SPE	SPECTROL	DAYTON	OH
SPEC	SPECTRUM CONTROL. INC.	FAIRVIEW	PA
SPR	SPRAGUE ELECTRIC CO.	INDIANAPOLIS	IN
SSS	SOLID STATE SCIENTIFIC	MONTGOMERYVILLE	PA
STR	STETTNER TRUSH CO.	CAZENOVIA	NY
STSA	STEEL SALES	INDIANAPOLIS	IN
SYL	GTE SYLVANIA	WALTHAM	MA
SYS	SYSCON INTERNATIONAL, INC.	SOUTH BEND	IN
T-F	THERMA-FILM	****	**
T-I	TEXAS INSTRUMENTS	DALLAS	TX
TCPL	TACONIC PLASTIC	PETERSBURG	NY
TEK	TEKTRONIX	INDIANAPOLIS	IN
TELE	TELETYPE CORP.	ELK GROVE VILLAGE	IL
THR	THERMALLOY CO.	DALLAS	TX
TIMES	TIMES WIRE AND CABLE	CINCINNAI	OH
TIN	TINNERMAN PRODUCTS, INC.	CLEVELAND	OH
TKN	TECHNICAL WIRE	CRAWFORD	NJ
TLNC	TELONIC ALTAIR	LAGUNA BEACH	CA
TORCO	TOR CORP.	VAN NUYS	CA
TRU	WALDES TRUARC	LONG ISLAND CITY	NY
TRW	TRW CAPACITOR DIV.	OGALLALA	NB
U-C	UNIVERSAL COMPONENTS	LOS ANGELES	CA
UNIC	UNICORP	ORANGE	NJ
UNIT	UNITRODE CORP.	WATERTOWN	MA
USECO	USECO DIV.	VAN NUYS	CA
VAC	VACTEC INC.	MARYLAND HEIGHTS	MO
VAR	VARADYNE CAPACITOR DIV.	SANTA MONICA	CA
VARIL	VARI-L CO.	DENVER	CO
VLIER	VLIER ENGINEERING CORP.	BURBANK	CA
W-E	WELLS ELECTRONICS	SOUTH BEND	IN
W-I	WAVETEK INDIANA, INC.	BEECH GROVE	IN
WAG	WAGNER ELECTRIC CORP.	ST. LOUIS	MO
WECK	WECKESSER CO., INC.	CHICAGO	IL
WSD	WAVETEK	SAN DIEGO	CA
WSR	WAVETEK	SANTA ROSA	CA
ZEN	ZENITH RADIO CORP.	CHICAGO	IL
ZERO	ZERO MANUFACTURING CO.	BURBANK	CA
ZPT	ZIPPERTUBING, CO.	LOS ANGELES	CA

5.3 SCHEMATIC NOTES - The following notes and abbreviations pertain to all schematics. Additional notes pertaining to specific schematics are included on each schematic if required.

All resistor values are shown in ohms unless otherwise specified.
All capacitor values are shown in picofarads (pF) unless otherwise specified.
All inductor values are shown in microhenries (μH) unless otherwise specified.

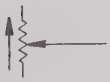
Denotes DC voltage reading in volts unless otherwise specified.

Denotes high impedance crystal detector reading in volts unless otherwise specified.

Denotes 50 ohm crystal detector reading in volts unless otherwise specified.

Signal or voltage source.

Connects to indicated signal or voltage source.



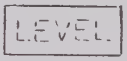
Arrow indicates clockwise rotation of wiper.

Coaxial jack

Coaxial plug

Coaxial cable

Factory adjusted part.



Denotes a front-panel device.

Denotes a rear-panel device.

Denotes a PC board adjustment or accessible module adjustment.

Denotes an internal module adjustment not accessible without removing module cover.

5.4 ABBREVIATION CODE

A	ampere	K	relay	Ω	ohm
AC	alternating current	kHz	kilohertz	P	plug
C	capacitor	kΩ	kilohm	pp	peak-to-peak
CR	diode	kV	kilovolt	pF	picofarad
dB	decibel	kW	kilowatt	Q	transistor
dBm	decibel referred to 1 mW	L	inductor	R	resistor
dBmV	decibel referred to 1 mV	MHz	megahertz	RF	radio frequency
DC	direct current	MΩ	megohm	RMS	root-mean-square
DS	indicating device, lamp	μF	microfarad	R.P.	rear panel
F	farad	μA	microampere	S	switch
F.P.	front panel	μH	microhenry	T	transformer
H	henry	M	meter	TP	test point
Har	harmonic	mA	milliampere	V	volt
Hz	hertz	mH	millihenry	VA	voltampere
IC	integrated circuit	mV	millivolt	W	watt
IF	intermediate frequency	mW	milliwatt	X	crystal
J	jack				

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY
8	CHASSIS,1075	A500-401	W-I	1111-00-0030	1
4	ATTEN, 7510-04	7510-04	W-I	1113-20-0022	1
5	ATTEN, 7550-01	7550-01	W-I	1113-20-0029	1
3	SOLID STATE SWITCH ASSY	A600-036	W-I	1118-90-0027	2
6	SWITCH ASSY,RS05	AL523-005	W-I	1212-00-0005	1
2	PC ASSY	AL530-008	W-I	1218-00-0851	1
1	MAIN BD ASSY	AL530-007	W-I	1110-00-0841	1
W1	CABLE ASSY, 8-3/8 IN	WX1075-W1	W-I	1217-70-0005	1
W2	CABLE ASSY, 6-1/2 IN	WX1075-W2	W-I	1217-70-0006	1
W3	DC BLK,5 IN,B173-03	B173-03	W-I	1113-80-0010	1
W4	CABLE ASSY, 5-1/4 IN	WX1075-W4	W-I	1217-70-0008	1
7	HARNESS ASSY	WY1075	W-I	1219-00-0048	1
S101	SWITCH,DPDT,3-POS	7211	C-K	5106-00-0013	1

WAVETEK PARTS LIST	TITLE	ASSEMBLY NO.	REV
	COMPARATOR,1075	1010-00-0030 PAGE: 1	E

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY
3	CONTACT MC000-068	08-50-0107	MOL	2113-07-0001	18
4	TERMINAL,MALE MC000-019	1854	MOL	2113-05-0002	11
J102	JACK,9-PIN	09-50-3091	MOL	2113-06-0001	1
J103	JACK,11-PIN	09-50-3011	MOL	2113-06-0006	1
P101	CONN,MALE,15-CKT	03-06-2151	MOL	2113-04-0001	1

WAVETEK PARTS LIST	TITLE	ASSEMBLY NO.	REV
	HARNESS ASSY	1219-00-0048 PAGE: 1	

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY
C1 C2 C5	CAP,CER,.005MF,1KV CD102-250	5GA-D50	SPR	1510-10-1502	3
C3	CAP,CER,.01MF,2KV CD102-310	5GA-S10	SPR	1510-10-1103	1
C4	CAP,CER,.025MF,50V CD103-325	TG-S25	SPR	1510-10-2253	1
CR1 CR2 CR3	DIODE DR000-001	1N4004	P-C	4806-01-4004	3
IC1 IC2	IC,IC000-005	RC4558DN	RAY	7000-14-5800	2
IC3 IC4 IC5	IC,IC000-002	NS741CV	STG	7000-57-4100	3
P2	CONN,MALE,9-PIN MC000-071	09-65-1091	MOL	2112-05-0001	1
P3	11 PIN LOCKING PLUG MC000-137	09-65-1111	MOL	2112-05-0005	1
Q1	TRANS QA038-541	2N3854A	G-E	4901-03-8541	1
Q2	TRANS QA054-580	2N5458	MOT	4901-05-4580	1
Q3	TRANS QA054-610	2N5461	MOT	4901-05-4610	1
R1 R13	RES,C,1/4W,5%,100K RC103-410	CF1/4-100K	ASE	4700-15-1003	2
R11 R19 R2 R20 R21 R23 R24 R27 R29 R30 R32 R34 R35 R36 R37 R38 R5 R6 R8 R9	RES,C,1/4W,5%,10K RC103-310	CF1/4-10K	ASE	4700-15-1002	20

WAVETEK PARTS LIST	TITLE MAIN BD ASSY	ASSEMBLY NO. 1110-00-0841 PAGE: 1	REV B

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY
R10 R14 R15 R3	RES,C,1/4W,5%,47K RC103-347	CF1/4-47K	ASE	4700-15-4702	4
R4	RES,C,1/4W,5%,27K RC103-327	CF1/4-27K	ASE	4700-15-2702	1
R7	RES,C,1/4W,5%,4.7K RC103-247	CF1/4-4.7K	ASE	4700-15-4701	1
R12	RES,C,1/4W,5%,1M RC103-510	CF1/4-1M	ASE	4700-15-1004	1
R22	RES,C,1/4W,5%,330 RC103-133	CF1/4-330	ASE	4700-15-3300	1
R25	RES,C,1/4W,5%,2.2K RC103-222	CF1/4-2.2K	ASE	4700-15-2201	1
R26	POT,2K,RP131-220	360T202B	CTS	4610-00-3202	1
R28 R33	RES,C,1/4W,5%,10M RC103-610	CB1065	A-R	4700-15-1005	2
R31 R40	RES,C,1/4W,5%,1.5K RC103-215	CF1/4-1.5K	ASE	4700-15-1501	2
R39 R41	RES,C,1/4W,5%,470 RC103-147	CF1/4-470	ASE	4700-15-4700	2
R43	RES,C,1/4W,5%,75K RC103-375	CF1/4-75K	ASE	4700-15-7502	1

WAVETEK PARTS LIST	TITLE MAIN BD ASSY	ASSEMBLY NO. 1110-00-0841 PAGE: 2	REV B

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY
R44	RES,C,1/4W,5%,390K RC103-439	CF1/4-390K	ASE	4700-15-3903	1
R45	RES,C,1/4W,5%,91K RC103-391	CF1/4-91K	ASE	4700-15-9103	1

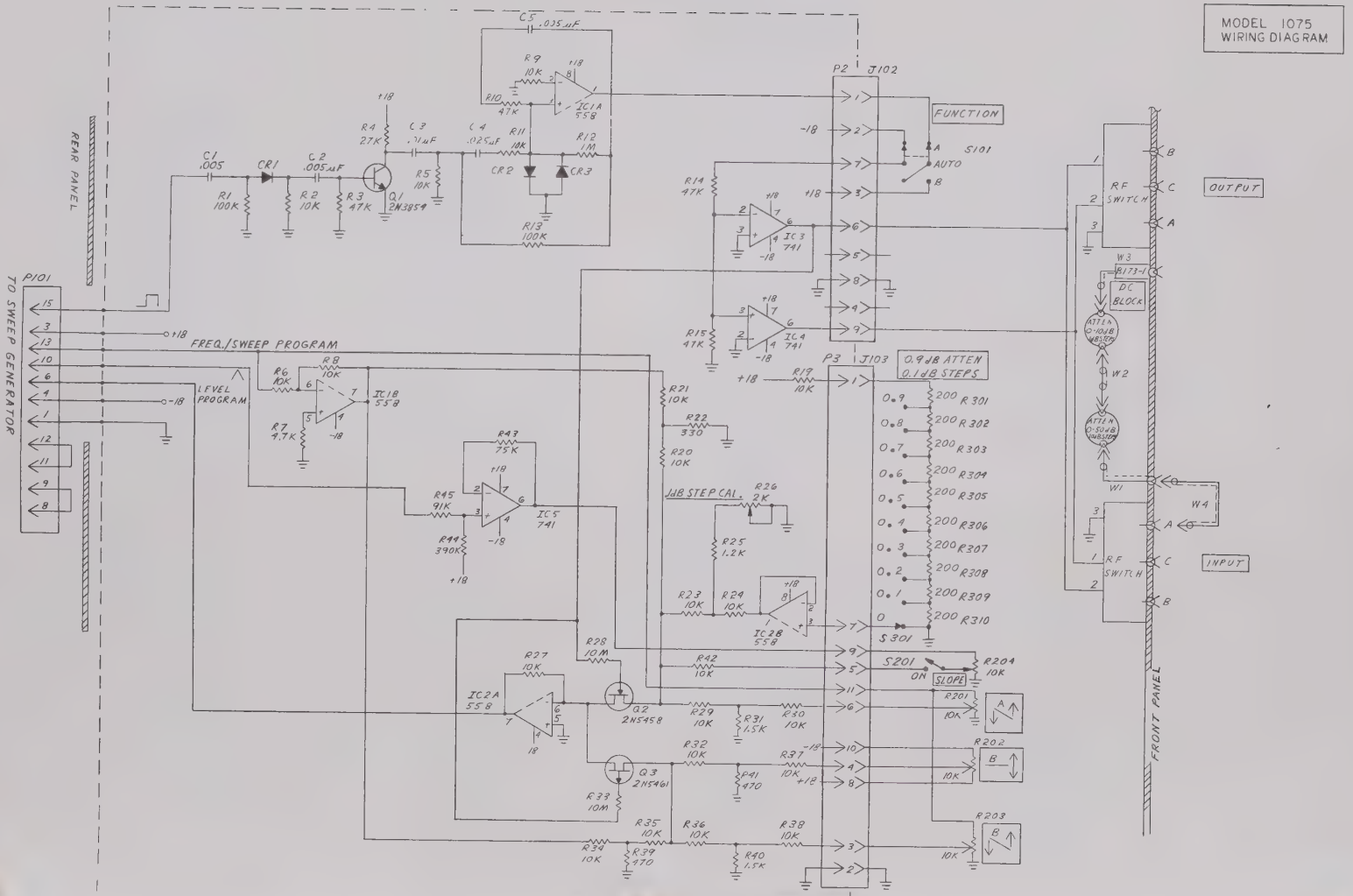
WAVETEK PARTS LIST	TITLE	ASSEMBLY NO.	REV
	MAIN BD ASSY	1110-00-0841 PAGE: 3	B

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY
R301 R302 R303 R304 R305 R306 R307 R308 R309 R310	RES,MF,1/8W,1%,200 RF211-200	MF55K200	ASE	4701-03-2000	10
S501	SWITCH ASSY,ROTARY 1 POLE,11 POS	PA1001	C-L	5104-00-0005	1

WAVETEK PARTS LIST	TITLE	ASSEMBLY NO.	REV
	SWITCH ASSY,RS05	1212-00-0005 PAGE: 1	

REFERENCE DESIGNATORS	PART DESCRIPTION	ORIG-MFGR-PART-NO	MFGR	WAVETEK NO.	QTY
R201 R202 R203 R204	POT,10K,RP131-310	360T1038	CTS	4610-00-3103	4
S201	SWITCH,SLIDE FROM:5105-00-0007	A900-273	A-I	5105-00-0008	1

WAVETEK PARTS LIST	TITLE	ASSEMBLY NO.	REV
	PC ASSY	1218-00-0851 PAGE: 1	B


MODEL 1075
WIRING DIAGRAM
REAR PANEL
FRONT PANEL
TO SWEEP GENERATOR
P101
FREQ./SWEEP PROGRAM
LEVEL PROGRAM
P2 J102
P3 J103
FUNCTION
S101
AUTO
OUTPUT
INPUT
RF SWITCH
DC BLOCK
0.9dB ATTEN
0.1dB STEPS
1dB STEP CAL.
S301
S201
ON
SLOPE
C5 .035μF
C1 .005
C2 .005μF
C3 .1μF
C4 .025μF
CR1
CR2
CR3
Q1 2N3859
Q2 2N5458
Q3 2N5461
IC1A 558
IC2A 558
IC2B 558
IC3 741
IC4 741
IC5 741
IC18 558
R1 100K
R2 10K
R3 47K
R4 27K
R5 10K
R6 10K
R7 9.7K
R8 10K
R9 10K
R10 47K
R11 10K
R12 1M
R13 100K
R14 47K
R15 47K
R17 10K
R19 10K
R20 10K
R21 10K
R22 330
R23 10K
R24 10K
R25 1.2K
R26 2K
R27 10K
R28 10M
R29 10K
R30 10K
R31 1.5K
R32 10K
R33 10M
R34 10K
R35 10K
R36 10K
R37 10K
R38 10K
R39 470
R40 1.5K
R41 470
R42 10K
R43 75K
R45 91K
R49 390K
R200 10K
R201 10K
R202 10K
R203 10K
R204 10K
R301 200
R302 200
R303 200
R304 200
R305 200
R306 200
R307 200
R308 200
R309 200
R310 200
W1
W2
W3
RJ73-1
W4
ATTEN 0-10dB 1dB STEPS
ATTEN 0-50dB 10dB STEPS
+18
-18

APPENDIX

APPLICATION NOTES

APPENDIX - MODEL 1067/1075 TEST SET APPLICATION NOTES

The Test Set is shipped with jumper cables between the Sweep Generator and the Comparator. The user must supply cables from the "B" (Loss) channel and from the "A" (Gain) channel. These cables should be of sufficient length to comfortably reach the devices to be tested.

CAUTION - The "F" connectors used on the Test Set are specially made for Wavetek. They exhibit excellent frequency characteristics, but are mechanically sensitive. When making cables, be sure the center conductor does not exceed .025" in diameter and that it does not protrude more than .06" from the front of the connector nut.

Figure A shows the operational block diagram of the 1067/75 Sweep Generator/Comparator.

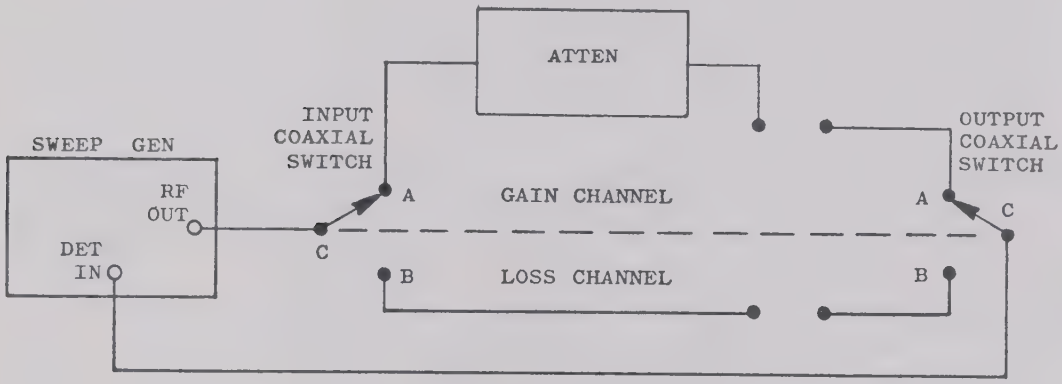


Figure A. Test Set Block Diagram

Complete connections are shown on the following pages for the various measurements encountered in CATV applications.

Note: Be sure the TRIG/RECUR switch is not in the TRIG position or the unit will not sweep when in non-line-lock sweep rates.

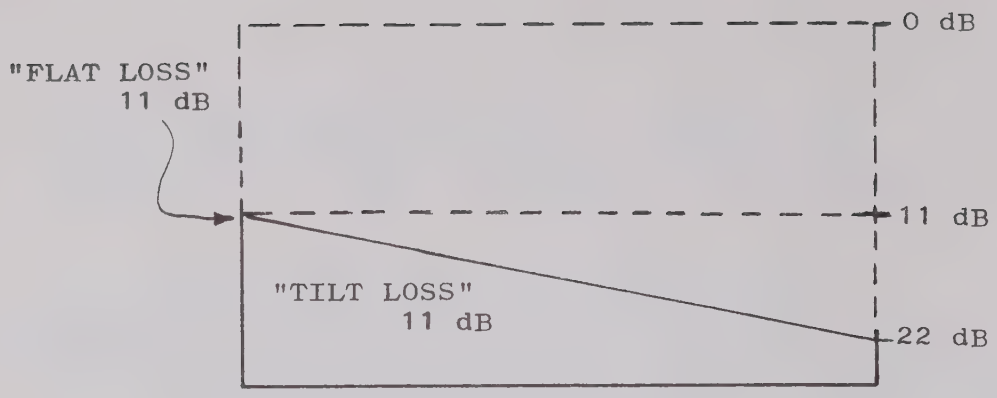


Figure 1-1

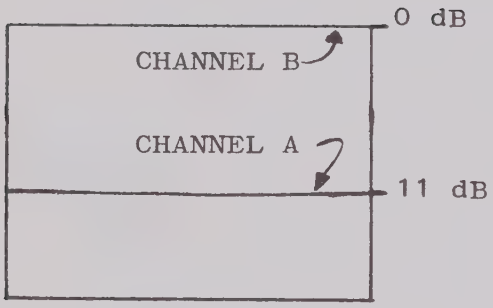


Figure 1-2

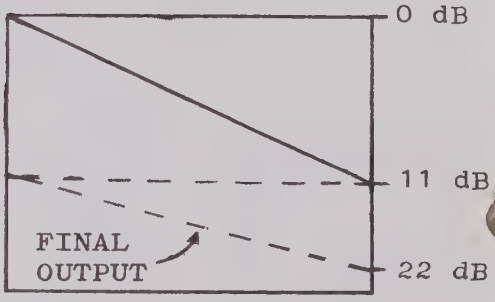


Figure 1-3

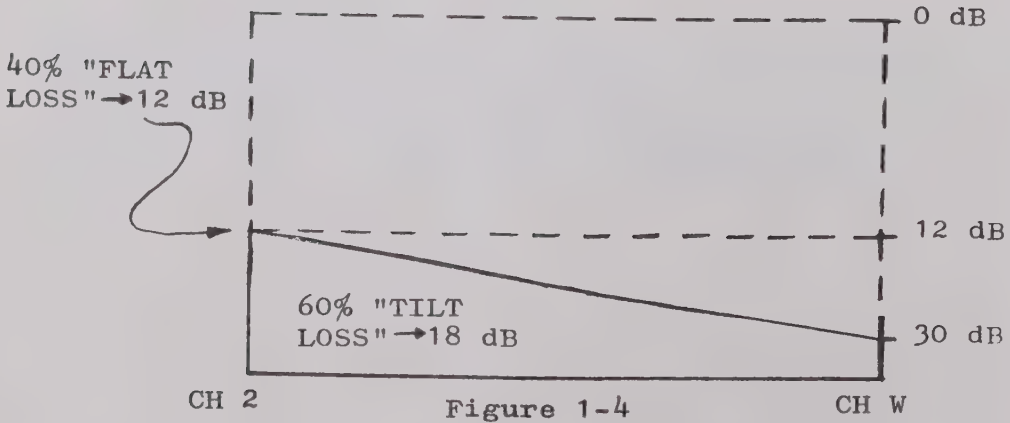


Figure 1-4

SECTION 1 - SLOPE A OPERATION

The SLOPE ON/OFF switch and SLOPE A control allow approximately -20 dB of slope to be imposed on channel A.

When the switch is on, the SLOPE A control will linearly decrease output as frequency is increased in order to simulate a specific length of cable. This simulation is approximate, but shouldn't deviate in excess of ±2 dB, close enough to allow the AGC System of the amplifier to operate in its normal manner. The gain and slope adjustments of the amplifier may be made on the test bench, with the final adjustments done when the amplifier is mounted in the system.

The following examples describe the use of this feature.

Example 1. For a low/mid/high band system (54 to 216 MHz), the typical cable loss at channel 2 will be approximately $\frac{1}{2}$ the loss at Channel 13. This may be expressed as loss at Channel 2 being "flat loss", and the differential between channels 2 and 3 being "tilt loss".

Assume a trunk amplifier in a 22 dB system is being aligned. Figure 1-1 illustrates the "flat loss" and "tilt loss" of 22 dB of cable.

To simulate this characteristic, insert 11 dB of attenuation from the 10 dB and 1 dB REFERENCE ATTENUATORS. this will produce an 11 dB reference (see Figure 1-2). Mark this reference.

Remove the 11 dB of attenuation, turn the SLOPE ON/OFF switch to ON, and adjust the SLOPE A control until channel 13 is tilted to the 11 dB reference (see Figure 1-3). Eleven dB of "tilt loss" has been introduced in channel A. Now add the 11 dB of attenuation from the 10 dB and 1 dB REFERENCE ATTENUATORS and the 1075 has closely duplicated the characteristics of Figure 1-1.

Example 2: For a 300 MHz system, the loss at Channel 2 will be approximately 40% of the loss at channel W, or 40% "flat loss" and 60% "tilt loss". For a 30 dB amplifier, see Figure 1-4.

To simulate this condition, insert 18 dB of attenuation and record the reference line. Remove the 18 dB of attenuation and adjust the "tilt" until 300 MHz is at the recorded point. Add 12 dB of "flat loss" and Figure 1-4 is closely simulated.

These examples are typical. The ratio of "flat" to "tilt" loss will vary with the type of cable being used in the system. Typical ratios are 50-50, 45-55, 40-60 and in some cases 35-65, depending on the bandwidth of the system and the specific type of cable being used.

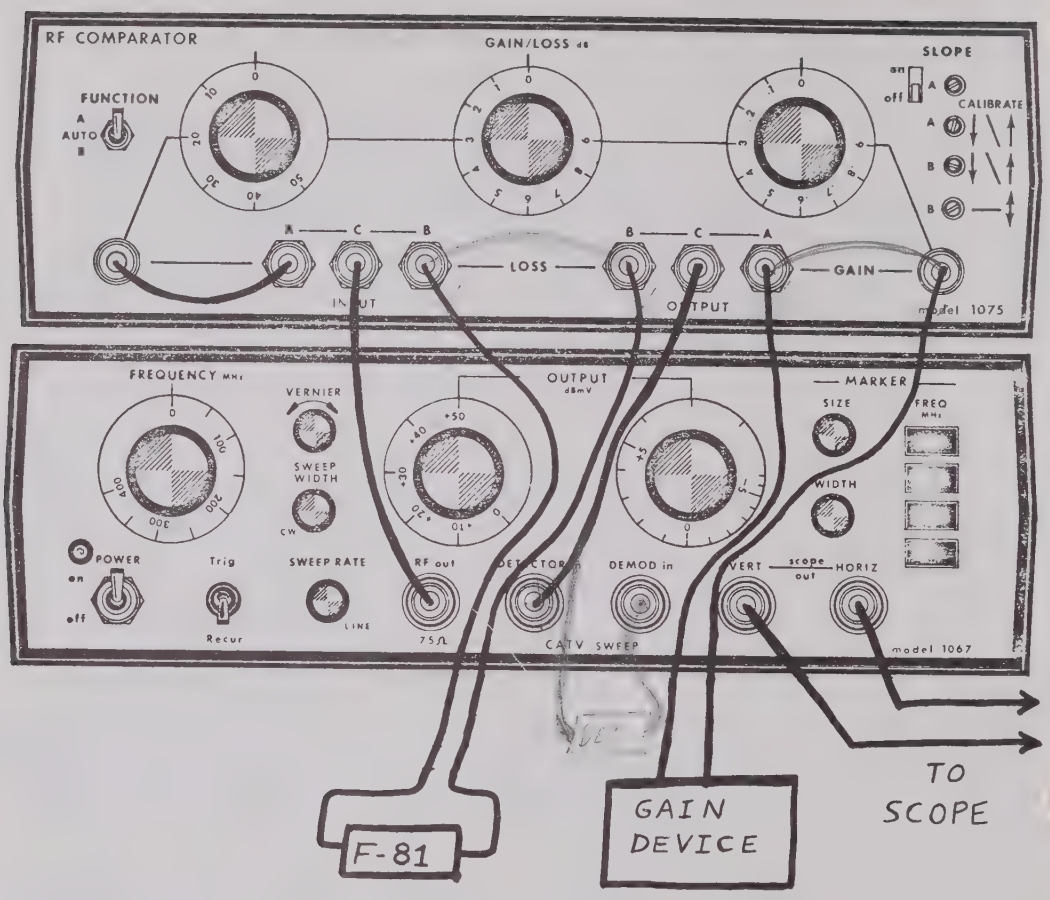


Figure 2-1. Set-up For Gain Measurements

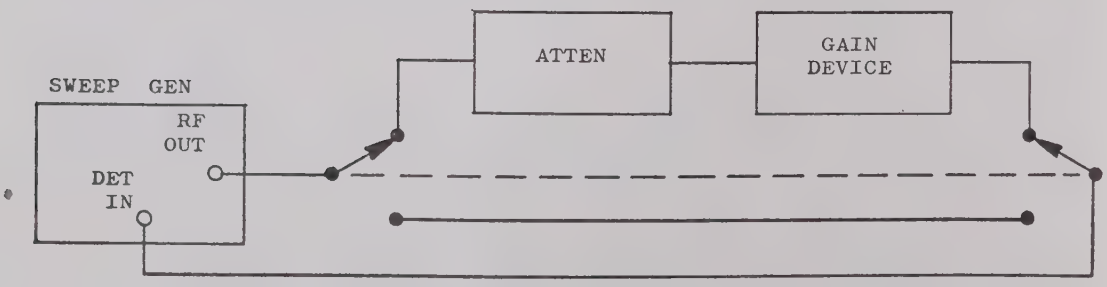


Figure 2-2. Equivalent Circuit

SECTION 2 - SET-UP FOR GAIN MEASUREMENTS

Set the Model 1067 RF output level to approximately (50 dBmV minus G) where G is the gain of the device being tested.

Connect the device to channel A and short channel B with an F-81 feed-through connector as shown.

Set the FUNCTION switch to AUTO and the SLOPE ON/OFF switch to OFF.

Dial in attenuation until the displayed traces touch at the frequency of interest (see Section 7).

The gain of the device equals the REFERENCE ATTENUATOR reading when the "reference" trace touches the "test device" trace at the frequency of interest.

Note: If aligning or evaluating a trunk or extender amplifier with the AGC circuits operational, it is necessary to insert a length of cable in series with the amplifier at the OUTPUT COAXIAL SWITCH A connector. This cable should exhibit the same loss at channel 13 as the gain of the amplifier.

An alternate method of duplicating this condition is to use the SLOPE A control feature of the Model 1075 (see Section 1).

In either case, the Model 1067 should be set for +50 dBmV output level.

Caution: When testing amplifiers with "power insertion ports", remove the fuses from the ports to avoid damaging the Model 1075 REFERENCE ATTENUATORS.

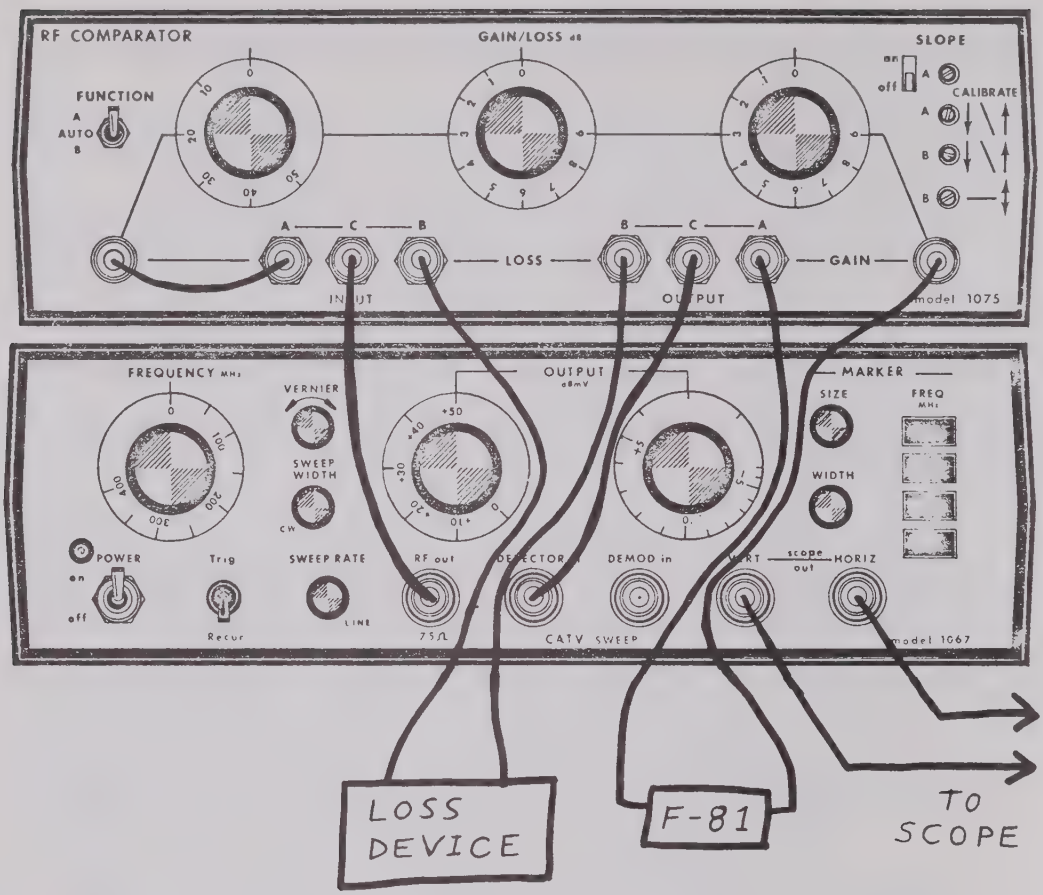


Figure 3-1. Set-up For Loss Measurements

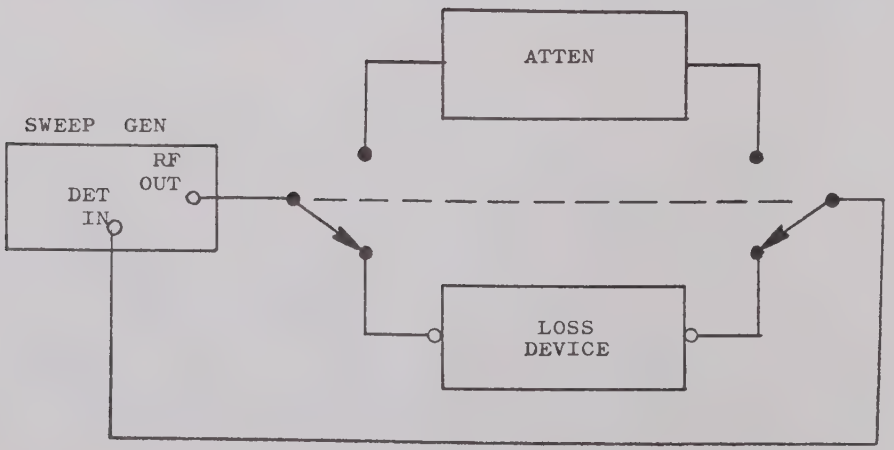


Figure 3-2. Equivalent Circuit

SECTION 3 - SET-UP FOR LOSS MEASUREMENTS

Short channel A with an F-81 feed-through connector and connect the loss device to channel B as shown.

Set the FUNCTION switch to AUTO and the SLOPE ON/OFF switch to OFF.

Dial in attenuation until the displayed traces touch at the frequency of interest.

The loss of the device equals the REFERENCE ATTENUATOR reading when the "reference" trace touches the "test device" trace at the frequency of interest (see Section 7).

NOTE: When measuring traps, notch filters, or devices with more than 30 dB loss, it will be necessary to use an amplifier between OUTPUT COAXIAL SWITCH C and Model 1067 DETECTOR IN.

While the harmonic content from the Model 1067 is exceptionally low (approximately -35 dB), it will contribute to errors in trap or filter measurements if the depth exceeds 40 dB. In such cases, a bandpass filter or bandpass amplifier should be used at the test device input.

Scan Loss Errors are also possible on extremely sharp traps. These errors are caused by "Scan Loss Delay" and occur when the change in detected voltage is faster than the response time of the detector output filter. To eliminate these errors, either reduce the sweep width or increase the sweep time on the Model 1067.

Note: The Wavetek D-173 Detector, when used in the "LO" resolution mode, will eliminate most Scan Loss Errors because of its fast response time.

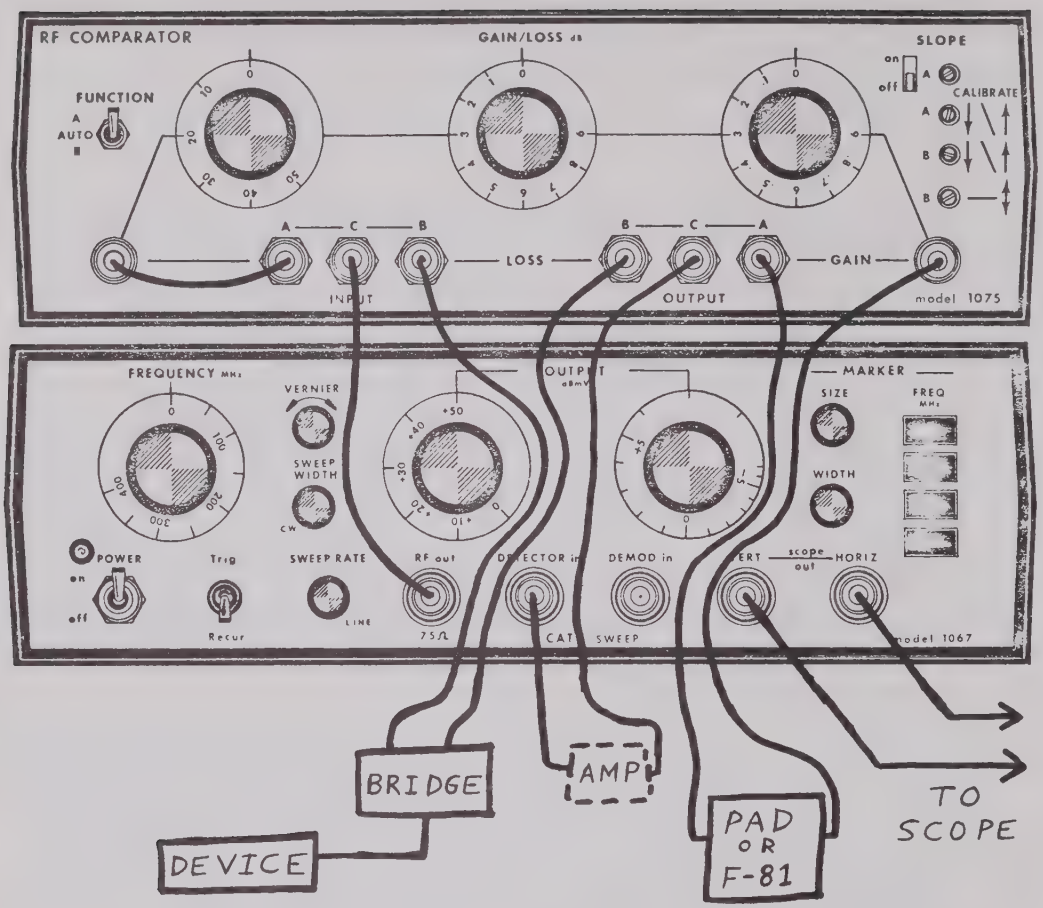


Figure 4-1. Set-up For Return Loss With Bridge

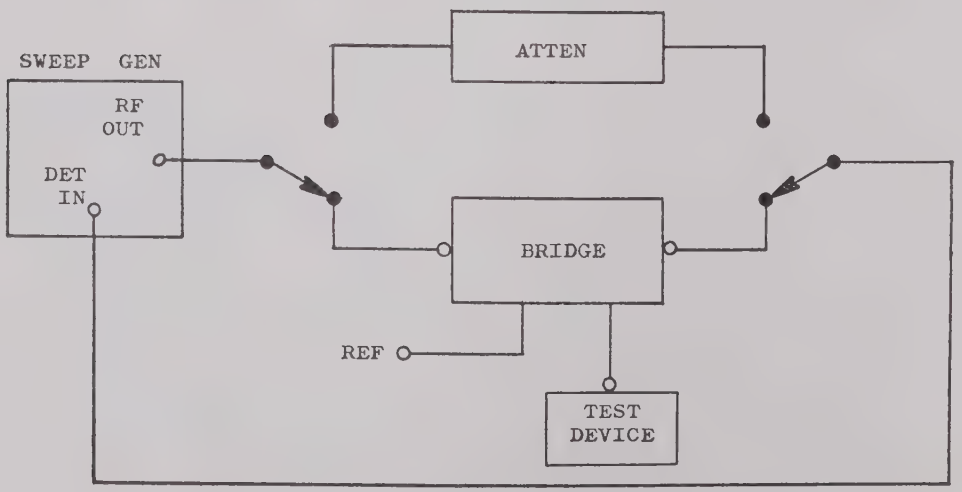


Figure 4-2. Equivalent Circuit

SECTION 4 - SET-UP FOR MEASURING RETURN LOSS WITH A BRIDGE

Connect a bridge (Wideband Engineering A-57T or equivalent) to channel B as shown.

Set the FUNCTION switch to AUTO and the SLOPE ON/OFF switch to OFF.

Connect the device to be measured to the bridge "unknown" port.

Since the bridge has a "thru-loss" of 12dB, a 12dB pad may be inserted into channel A for a direct reading from the REFERENCE ATTENUATORS. If a pad is not used, an F-81 feed-through connector may be used and 12dB subtracted from the REFERENCE ATTENUATOR reading.

Note: When measuring return loss exceeding 20 dB, it may be necessary to insert a wideband amplifier (Wideband Engineering A-82A or equivalent) between Model 1075 OUTPUT COAXIAL SWITCH C and Model 1067 DETECTOR IN.

Note: When measuring cable, be sure the end of the cable is terminated in 75 ohms. Also, be careful of Scan Loss Errors (see Section 3).

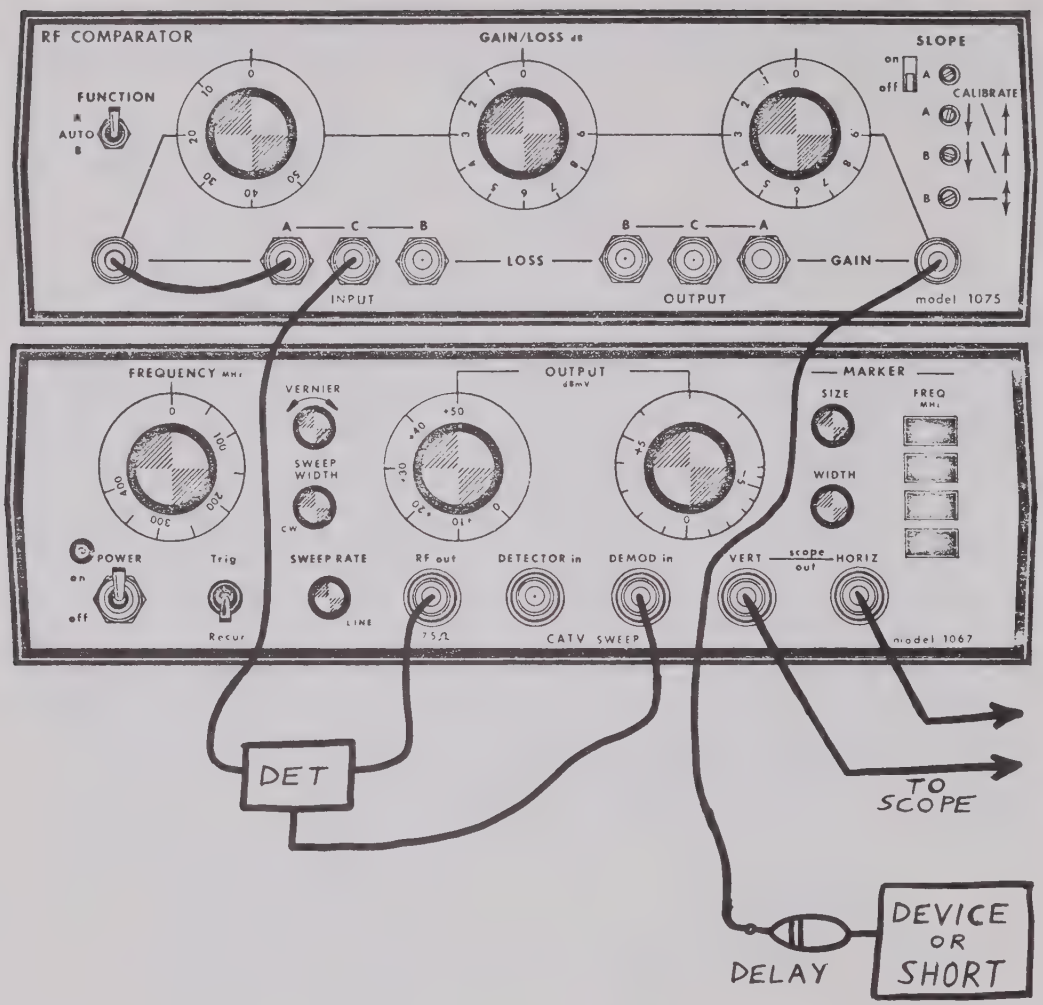


Figure 5-1. Set-up For Delay Line Return Loss (Single Channel)

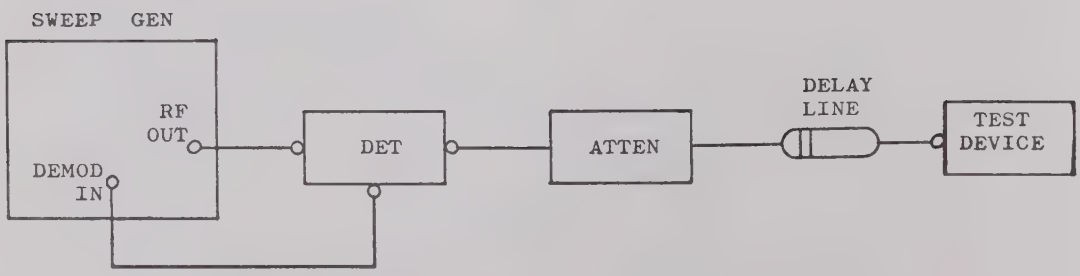


Figure 5-2. Equivalent Circuit

SECTION 5 - SET-UP FOR "DELAY LINE" RETURN LOSS MEASUREMENTS (single channel)

Construct a suitable delay line (approximately 75' of RG 59/U will suffice).

Connect a feed-through detector (Wavetek D-173 or equivalent) between Model 1067 RF OUT and Model 1075 INPUT COAXIAL SWITCH C. Connect the detector output to Model 1067 DEMOD IN.

Set the FUNCTION switch to A and the SLOPE ON/OFF switch to OFF.

Connect one end of the delay line to the Model 1075 OUTPUT as shown.

Connect the device to be measured to the other end of the delay line.

Set all REFERENCE ATTENUATORS to zero. Measure the peak-to-peak amplitude of the ripple pattern.

Remove the test device and connect a short circuit to the end of the delay line. Dial in attenuation until the peak-to-peak amplitude is the same as in the previous step. The return loss is <u>twice</u> the REFERENCE ATTENUATOR reading.

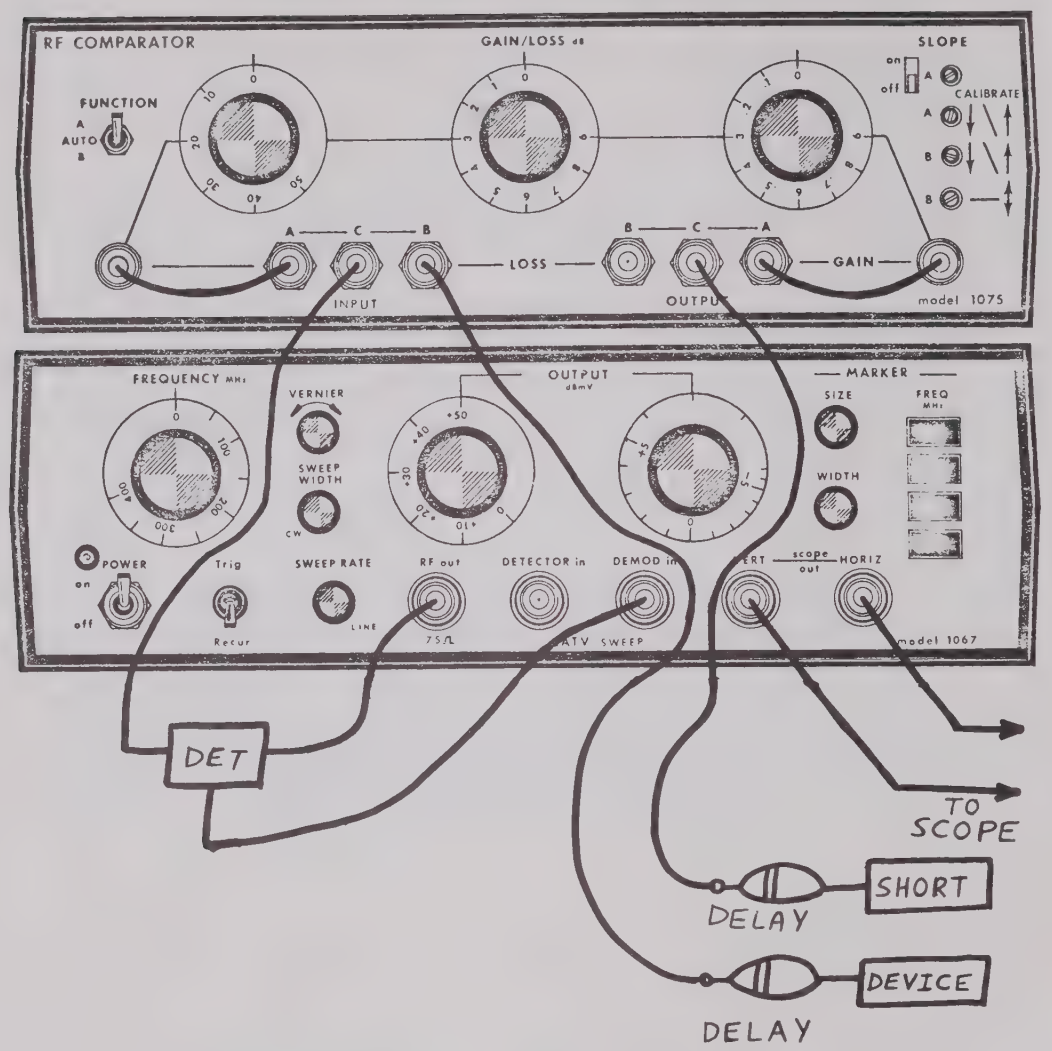


Figure 6-1. Set-up For Delay Line Return Loss (Dual Channel)

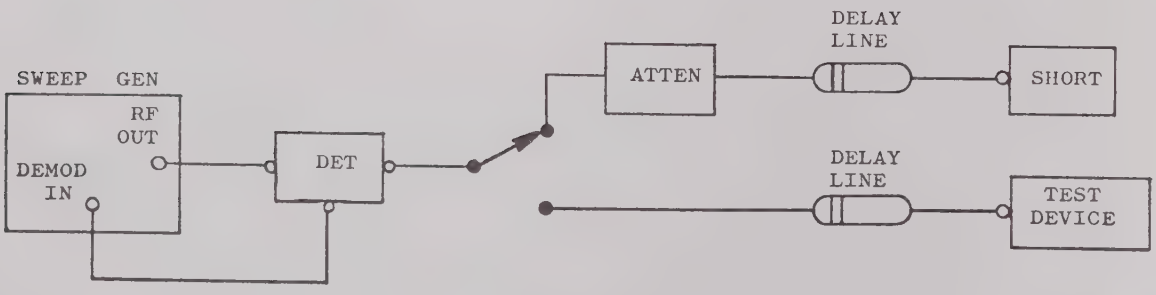


Figure 6-2. Equivalent Circuit

SECTION 6 - SET-UP FOR "DELAY LINE" RETURN LOSS MEASUREMENTS (dual channel)

Connect a feed-through detector (Wavetek D-173 or equivalent) between Model 1067 RF OUT and Model 1075 INPUT COAXIAL SWITCH C. Connect the detector output to Model 1067 DEMOD IN.

Construct two delay lines, one consisting of approximately 75' of RG59/U, the other consisting of a length of RG59/U about one foot longer than the first.

Connect the shorter delay line to Model 1075 OUTPUT COAXIAL SWITCH C. Connect the longer delay line to INPUT COAXIAL SWITCH B.

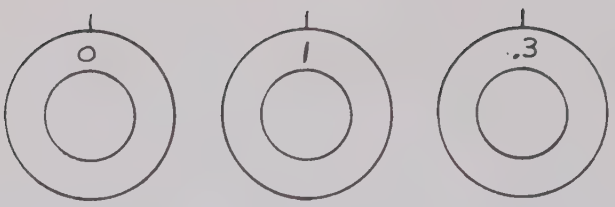
Set all REFERENCE ATTENUATORS to zero.

Set the FUNCTION switch to AUTO and the SLOPE ON/OFF switch to OFF. The ripple patterns of both delay lines will be displayed.

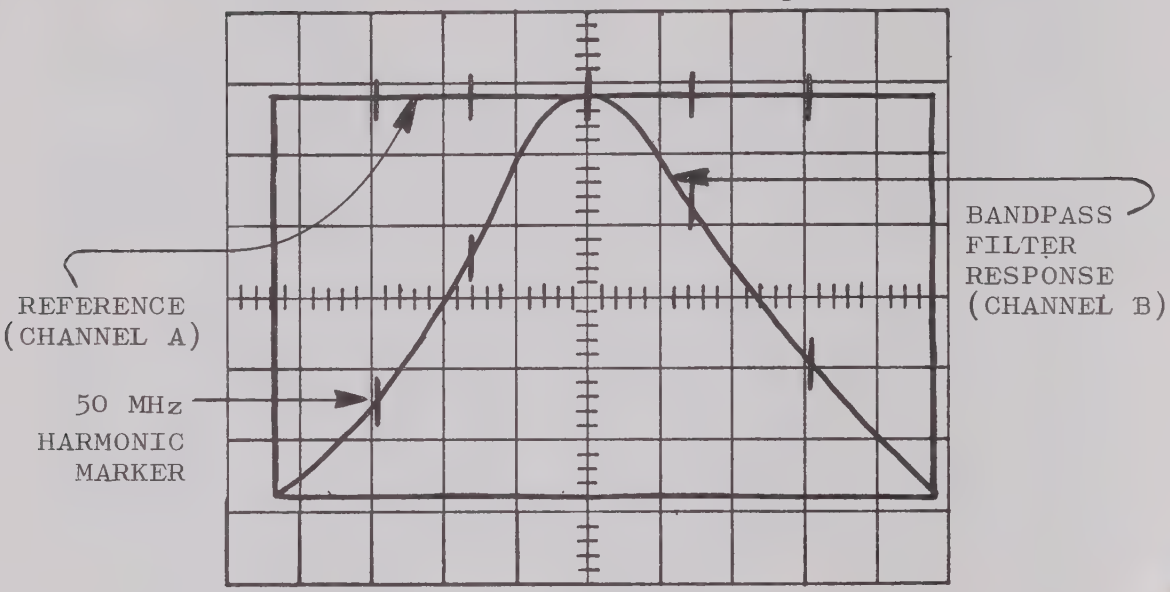
Begin cutting short (approximately $\frac{1}{2}$") pieces from the longer cable. Do this until the ripple patterns match exactly. The delay lines are now identical.

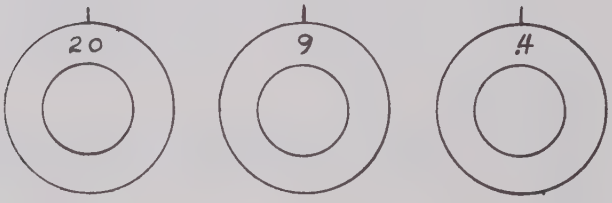
After the delay lines have been matched, connect the device to be tested to the open end of the delay line connected to INPUT COAXIAL SWITCH B. Connect a short circuit to the open end of the other delay line.

Dial in attenuation until the ripple patterns have the same peak-to-peak amplitude. The return loss is <u>twice</u> the REFERENCE ATTENUATOR reading.

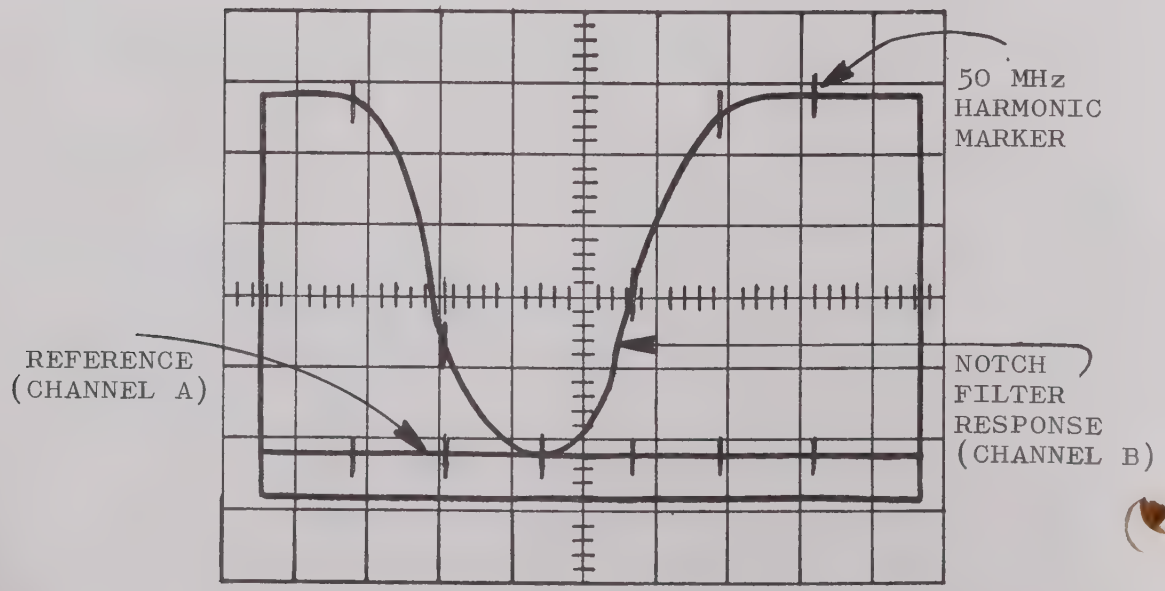


FILTER INSERTION LOSS = 1.3 dB





NOTCH FILTER DEPTH = 29.4 dB



SECTION 7 - SAMPLE TRACES

Shown below is an oscilloscope trace for a typical gain measurement (see Section 2).

On page 14 are shown oscilloscope traces for typical loss measurements (see Section 3).